June 27, 1956

Dear Dr. Pollock:

Thank you for your samples of penicillinase and for your letter of the 15th. I am sorry to have made such a fuss about the mores of culture-sending, but in the past have encountered quite respectable people who have been rather fussy about such matters.

It has been my intention, as far as possible, to try to concentrate efforts on similar biological materials, for obvious reasons, and for this reason am trying to work your B. cereus into our studies if possible. Naturally we will keep you informed of any developments of mutual interest, as far as a lazy temperament and other distractions allow.

I am enclosing a ms. which I have recently had mimeographed which may explain my recent interest in penicillin. From this work, the most plausible hypothesis for the m/o of penicillin is an inhibition of a wall-forming enzyme. Taking a clue from Johnson & Park's work (and many others) a plausible working hypothesis is an enzyme which transfers the nonnucleotide moiety of uridine-diphospho-acetylaminoglucuronoamino acids to a polymer which is a wall constituent (in Staph.), which is inhibited by penicillin. The actual block may, of course, be several steps removed.

The ms. is to be published, possibly in the August 1956 number, in the Proc. Nat. Acad. Sci. My former student, Dr. Zinder, has made some independent observations on protoplast formation in E. coli under the influence of lysozyme which we expect to be published concurrently.

A number of people have already expressed their interest in these protoplasts as biological tools, and I am of course only too pleased at that. The pursuits in which I am particularly interested myself for the moment are only the m/o of penicillin, already mentioned, and the possible use of protoplasts in genetic work, e.g., transduction (transformation) by DNA, and recombination via protoplast fusion in F- x F- combinations. So far, no encouragement at all on this, but we have only tried a few of the innumerable designs for such experiments.

Yours sincerely,

Joshua Lederberg
Professor of Genetics